Amendments to the Drawings:

The drawing sheets attached in connection with the above-identified application containing Figures 5-8 are being presented as a new formal drawing sheets.

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1-14 are cancelled. Claims 15-25 are added. After amending the claims as set forth above, claims 15-25 are now pending in this application.

Drawings

The drawings are objected to under 37 CFR § 1.83(a). Specifically, the Patent Office finds that the drawings do not show every feature of the invention specified in the claims. Applicants address each element individually below.

Applicants note that "conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box)." 37 CFR § 1.83(a).

"Air flow control element": This element is depicted in the labeled representation in Fig. 5, as shown in the new drawing sheets.

"Housing": This element is depicted in Fig. 1 as reference numeral 5.

"Motor vehicle" and "vehicle interior": These elements are depicted in the labeled representation in Fig. 8, as shown in the new drawing sheets.

"At least two setting ranges," "a first setting range," "a second setting range," "a first end position," "intermediate positions," "a second end position": These elements are all depicted in Fig. 2, as explained in the Specification as filed between page 6, line 36 and page 8, line 23.

"Electronic position sensor": This element is depicted in the labeled representation in Fig. 6, as shown in the new drawing sheets.

"Electric motor": This element is depicted in the labeled representation in Fig. 7, as shown in the new drawing sheets.

The objections regarding the remaining elements have been rendered moot in view of the amendment to the claims.

Claim Rejections – 35 U.S.C. § 112

Claims 1-14 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claims 1-14 are cancelled, rendering the rejection moot. However, to assist the Patent Office in further examination of the new claims, Applicants make the following observations.

The Office alleges that nearly all the claim terms are "relative terms." Specifically the Office alleges that many terms are "not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonable apprised of the scope of the invention." Applicants respectfully submit that the Office has erred in rejecting clearly definite terms as being "relative." The form paragraph used by the Office is reserved for "terms of degree." See MPEP § 706.03(d), ¶ 7.34.03. Not one of the terms rejected by the examiner as being a "relative term" is, in fact, a term of degree. For example, the terms "spot flow," "range," "actuating," and "end position," have their plain and ordinary meaning. They are definite terms that would be well known to a person skilled in the art. To the extent the Office disagrees, Applicants request an interview with the Examiner to discuss the allegedly "relative" claim terms.

Regarding the term "actuating element," the Office states that "[t]he Specification and Drawings don't describe or show if the actuating element is moving or moving another element not show making the term indefinite." *See* Office Action at page 4. Applicants' attempts to discern the meaning of this sentence have been unavailing. However, the term "actuating element" has its plain and ordinary meaning: "an element that actuates." The term "actuate" also may have its plain and ordinary meaning: "cause to operate." To the extend the Office disagrees, clarification of the rejection is respectfully requested.

Regarding the term "setting range," the Office states that "[t]he Specification and Drawings don't describe or show what is defined as a setting range." *See* Office Action at page 4. A "setting range" is discussed in detail in the Specification as filed, for example from page 6, line 30 to page 8, line 27, and one of ordinary skill in the art would readily understand its meaning.

Regarding the term "spot flow," the Office alleges that "[t]he Specification and Drawings only implies that there is a spot position when air is only being directed to the face . . . ." *See* Office Action at pages 5-6. This is incorrect. The Specification provides that a "spot flow" may be a directed flow of air: "The transmission of this setting to at least one actuating element of at least one air vent leads to an adjustment of the at least one air vent, in which the latter, in accordance with the "diffuse" setting, introduces diffuse air into the interior and, in accordance with the "spot" setting, introduces directed air or a spot flow into the interior." Specification as filed at page 3, lines 20-27.

Regarding the term "end position," the Office alleges that "[t]he first end position and second end position are on a circle that does not have ends." See Office Action at page 5. The claims do not recite "end position" of a circle. They recite "end positions" of a first or second setting range. Each setting range may correspond to only a portion of the operating element. For example, in Figure 2, the first setting range may correspond to the left side of the operating element and the second setting range may correspond to the top and right side of the operating element. See Specification as filed at p. 6, l. 36 to p. 7, l. 11.

Regarding the phrase "at least one actuating element of at least one air vent of at least one air flow control element has at least one electric motor as actuator," the Office alleges that "[t]he Specification and Drawings don't describe or define how the at least one actuating element of at least one air vent of at least one air flow control element has at least one electric motor as actuator since the at least one actuating element of at least one air vent is actuated by the Bowden cable or flexible shaft." See Office Action at p. 6. Figure 4 shows an example of how an electric motor can actuate the actuating element. The electric motor receives inputs from an electronic position sensor in the operating unit through electric lines 11. It then

actuates the actuating element through the transmission element 4, which can be a Bowden cable or flexible shaft.

Claim Rejections – 35 U.S.C. § 102

Claims 1-11 and 13-14 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,700,191 ("Nieling"). Claims 1-11 and 13-14 are cancelled, rendering the rejection moot. However, to assist the Patent Office in further examination of the new claims, Applicants make the following observations.

New claim 15 is directed to an actuating device for a motor vehicle, the actuating device comprising: an operating unit comprising an operating element that is placable within a first setting range or a second setting range during use of the actuating device; an air vent comprising a first actuating element, the air vent being configured to control whether air provided to an interior of the motor vehicle is conditioned in a form of an intensely directed flow, a diffuse flow, or a mixture of the intensely directed flow and the diffuse flow during use of the actuating device; an air flow control element comprising a second actuating element, the air flow control element being configured to control a distribution of the air to a plurality of outlets in the interior of the motor vehicle during use of the actuating device; a first transmission element connecting the operating unit to the air vent; and a second transmission element connecting the operating unit to the air flow control element. When the operating element is placed within the first setting range, the operating unit is configured to control the air vent via the first transmission element and the first actuating element during use of the actuating device. When the operating element is placed within the second setting range, the operating unit is configured to control the air flow control element via the second transmission element and the second actuating element. Nieling does not disclose or teach this combination of features.

For example, Nieling does not disclose or teach "an air vent comprising a first actuating element, the air vent being configured to control whether air provided to an interior of the motor vehicle is conditioned in a form of an intensely directed flow, a diffuse flow, or a mixture of the intensely directed flow and the diffuse flow during use of the actuating device." The Office cites reference numbers 26, 27, and 28 of Nieling as corresponding to

settings in with diffuse air, directed air, or a mixture of the two are provided. *See* Office Action at page 7. This is incorrect. The settings referred to by the Office correspond to different outlets to which air can be provided. *See* Nieling at col. 4, ll. 16-29. They do not correspond to different ***conditions*** of air provided to a vehicle interior, as required by claim 15.

Because Nieling does not disclose or teach "an air vent comprising a first actuating element, the air vent being configured to control whether air provided to an interior of the motor vehicle is conditioned in a form of an intensely directed flow, a diffuse flow, or a mixture of the intensely directed flow and the diffuse flow during use of the actuating device," Nieling necessarily does not disclose or teach that "when the operating element is placed within the first setting range, the operating unit is configured to control the air vent via the first transmission element and the first actuating element during use of the actuating device," as required by claim 15.

For at least these reasons, claim 15 is patentable over Nieling.

Claim Rejections – 35 U.S.C. § 103

Claim 12 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nieling in view of U.S. Patent No. 5,890,958 ("Greiner"). Claim 12 is cancelled, rendering the rejection moot.

Concluding Remarks

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected

or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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Annotated Substitute Specification

Actuating device and heating or air conditioning unit

The present invention relates to an actuating device for setting at least two actuating elements and to a heating or air conditioning unit with an actuating device of this type.

In the case of heating or air conditioning systems, in particular in motor vehicles, a desired temperature level of the air blown into a motor vehicle interior is usually set by hot and cold air being mixed in the interior of a housing of the heating or air conditioning unit and the mixture being blown out of outlets of the system. The mixing ratio and therefore the temperature is controlled, like the distribution of air to various outlets, by means of air flow control elements, for example one or more flaps which open or block the air-guiding ducts to a desired extent.

An air flow control element of this type is set by the operating element of an operating unit by means of an actuating device, with the movements of the operating element being transmitted to the air flow control element, for example by means of a flexible shaft.

In addition to a certain temperature level and a distribution of the air-conditioned air to different regions of the passenger compartment, more recent concepts of air conditioning also provide the possibility of selecting the type of flow of the air-conditioned air, in particular in order to increase the vehicle occupants' sensation of comfort. The passenger can set individual air vents or nozzles in such a manner that the air blown into the vehicle interior is conditioned in the form of an intensely directed flow, a diffuse flow or else as a mixture of these two types of flow.

It is prior art to set the distribution of the air-conditioned air in the interior, for example by means of a rotary switch or slide switch on the operating unit of the air conditioning system. The selection of the type of flow is set directly at the air vent or at the nozzle, for example via a selection wheel or a slide.

It is the object of the invention to provide an actuating device and a heating or air conditioning unit with an actuating device, in which both the distribution of air and the discharge of air can be set via an individual operating element.

This object is achieved by an actuating device with the features of claim 1 and by a heating and/or air conditioning system with the features of claim 13.

According to claim 1, an actuating device according to the invention, for setting or adjusting at least one actuating element of at least one air vent and at least one actuating element of at least one air flow control element in at least one air-guiding duct in a housing of a heating or air conditioning unit of a motor vehicle, comprises an operating unit having at least one operating element and at least two elements for transmitting the movements of the at least one operating element of the operating unit to the actuating elements. The operating element of the operating unit is preferably designed as a rotary switch or slide switch.

The movement or change in position of at least one operating element is transmitted via at least two transmission elements, preferably Bowden cables or flexible shafts, to at least one actuating element of at least one air vent and to at least one actuating

element of at least one air flow control element. In this case, the operating element on the operating unit has two setting ranges which are independent of each other.

In a first setting range, the movement or the changing of the position of the operating element is transmitted to at least one actuating element of at least one air vent. In a second setting range, the movement or the changing of the position of the operating element is transmitted to at least one adjusting element of at least one air flow control element. The two setting ranges are independent of each other, that is to say either at least one actuating element of at least one air vent or at least one actuating element of at least one air flow control element can be adjusted.

In a first setting range, the operating element on the operating unit can be adjusted from a first end position "diffuse" via intermediate positions to a second end position "spot". The transmission of this setting to at least one actuating element of at least one air vent leads to an adjustment of the at least one air vent, in which the latter, in accordance with the "diffuse" setting, introduces diffuse air into the interior and, in accordance with the "spot" setting, introduces directed air or a spot flow into the interior. In the intermediate positions, a mixture of diffuse and directed air flow, which mixture corresponds to the position of the operating element, is introduced into the interior. The air vents used in this case are preferably swirl nozzles with which this variation of the flow characteristic of the air can be achieved.

In a second setting range, the operating element on the operating unit can be adjusted from a first end

position "defrost" via intermediate positions to a second end position "foot well". The transmission to the at least one actuating element of at least one air flow control element brings about an adjustment of the at least one air flow control element, in which the latter, in accordance with the "defrost" setting, ensures that the windshield is ventilated and, in accordance with the "foot well" setting, ensures that the foot well is ventilated. In the intermediate positions, a mixture of windshield and foot well ventilation, which mixture corresponds to the setting of the operating element, is obtained.

It is essential for the invention that the two setting possibilities described can be realized by means of an individual operating element on the operating unit. According to a preferred embodiment of the actuating device according to the invention, the response behavior and activation behavior, which are independent of each other, of the actuating elements in the two separate setting ranges is brought about by a cam disk with at least two different radial cams. The operating element is connected rigidly to a cam disk. A respective radial cam for controlling the separate movement of the movement transmission elements, such as, for example, the Bowden cables or flexible shafts for the two different setting ranges, is preferably situated in each case on the front side and the rear side of the cam disk. In an advantageous embodiment of the actuating device according to the invention, this control can also take place via at least two cam disks each having at least one radial cam.

According to a preferred development of the actuating device according to the invention, at least one actuating element of at least one air vent and/or of one air flow control element can be driven by an

electric motor as actuator. The setting or adjustment movement of the operating element on the operating unit can preferably be detected via an electronic position sensor and can be transmitted via electric lines to at least one electric motor of an actuating element.

Since the construction space in the region of an air vent or an air flow control element may be very limited, the drive motors may also be combined in a central motor unit which is situated, for example, on the housing of the air conditioning unit or at any desired location, depending on the available construction space, and from there uses transmission elements, such as, for example, Bowden cables or flexible shafts, to move the corresponding actuating elements.

According to a preferred development, the actuating device according to the invention is used in a heating or air conditioning unit which comprises at least one of the following components: heat exchanger, heating element, evaporator, filter, temperature mixing flap, mixing chamber, one or more flow ducts and one or more control flaps for distributing the air to the outlet ducts.

The invention is explained in more detail below using exemplary embodiments with reference to the drawings, in which:

fig. 1 shows a diagrammatic view of an actuating device for setting actuating elements according to the present invention;

fig. 2 shows a diagrammatic view of an operating unit with an operating element according to the present invention;

fig. 3 shows a diagrammatic view of an arrangement according to the invention for transmitting the movement of an operating element to the actuating elements;

fig. 4 shows a diagrammatic view of an arrangement according to the invention for realizing a central motor unit.

fig. 5 shows a diagrammatic view of a heating/air conditioning unit with an air guiding duct having an air flow control element.

fig. 6 shows a diagrammatic view of an operating unit with an electronic position sensor.

fig. 7 shows a diagrammatic view of an actuating element connected to an electric motor.

fig. 8 shows a diagrammatic view of a motor vehicle having a vehicle interior with outlets.

Fig. 1 diagrammatically illustrates a preferred embodiment of an actuating device 1 for setting or adjusting an actuating element 6 of an air vent 8 and a second actuating element 7 of an air flow control element 14 in at least one air-guiding duct 15 in a housing of a heating or air conditioning unit 5 of a motor vehicle 18, and an operating unit 2 with an operating element 3 and a respective element for transmitting 4 the movements of the operating element 3 of the operating unit 2 to the actuating elements 6 and 7 according to the present invention. The air flow control element and the air-guiding ducts ~~which~~ are situated in the housing of the heating or air conditioning unit 5 ~~are not illustrated in fig. 1~~.

The elements for transmitting 4 the position or changing position of the operating element 3 to the actuating element 6 of the air vent 8 and to the actuating element 7 of the air flow control element are designed in the form of Bowden cables or flexible shafts.

Fig. 2 shows, in a diagrammatic illustration, a view of an operating unit 2 with an operating element 3 which is designed as a rotary switch. The operating element has two separate setting ranges, the function and operation of which are explained below.

In a first setting range (left-hand side in fig. 2), the movement or the changing of the position of the operating element 3 is transmitted to the actuating element 6 of the air vent 8.

In a second setting range (right-hand side in fig. 2), the movement or the changing of the position of the operating element 3 is transmitted to the adjusting element 7 of the air flow control element. The two setting ranges are independent of each other, that is to say either the actuating element 6 of the air vent 8 or the actuating element 7 of the air flow control element can be adjusted.

In the first setting range, the operating element 3 on the operating unit 2 can be adjusted from a "diffuse" position (bottom left in fig. 2) via intermediate positions to a "spot" position (top left in fig. 2). The two end positions "diffuse" and "spot" and an intermediate position in between are illustrated by way of symbolic depictions on the operating unit 2.

The transmission of the adjustment movement of the operating element 3 to the actuating element 6 of the air vent 8 leads to an adjustment of the air vent 8. In accordance with the "diffuse" setting, the air vent 8 is set by the actuating element 6 in such a manner that the air which is conducted into the vehicle interior 19 has a diffuse flow characteristic. In accordance with the "spot" setting, the air vent 8 is set by the actuating element 6 in such a manner that the air which is conducted into the vehicle interior has a directed or spot-shaped flow characteristic. In the region in between, depending in each case on the setting of the operating element 3, a corresponding mixture of diffuse and directed air flow is blown into the interior. For the air vent 8 here use is preferably made of swirl nozzles with which the described variation of the flow characteristic can be achieved.

In the second setting range, the operating element 3 on the operating unit 2 can be adjusted from a "defrost" position (top center in fig. 2) via intermediate positions to a "foot well" position (bottom right in fig. 2). The two end positions "defrost" and "foot well" and an intermediate position in between are likewise illustrated by way of symbolic depictions on the operating unit 2.

The transmission of the adjustment movement of the operating element 3 to the actuating element 7 of the air flow control element leads to an adjustment of the air flow control element. In accordance with the "defrost" setting, the air flow control element is set by the actuating element 7 in such a manner that the vehicle windshield is ventilated to maximum extent. In accordance with the "foot well" setting, the air flow control element is set by the actuating element 7 in such a manner that the vehicle foot well is ventilated

to maximum extent. In the region in between, depending in each case on the setting of the operating element 3, a corresponding mixture of windshield and foot well ventilation is obtained.

It is essential for the invention that these two setting possibilities can be realized by means of an individual operating element 3 on the operating unit 2.

According to a preferred embodiment of the actuating device 1 according to the invention, the different response behavior and activation behavior of the actuating elements 6 and 7 in the two separate setting ranges is obtained, as illustrated in fig. 3, by a cam disk 9 with two different radial cams. A respective radial cam for controlling the independent movement of the two movement transmission elements 4, for example of the Bowden cables or flexible shafts, for the two different setting ranges is situated in each case on the front side and rear side of the cam disk 9. A pin (not illustrated in fig. 3) is situated on a lever 13, which is connected to the transmission element 4 for adjusting the actuating element 6 at the air vent 8, which pin engages in the radial cam on the rear side of the control disk 9 and is guided by it. Similarly, a pin (not illustrated in fig. 3) is situated on the lever 10, which is connected to the transmission element 4 for adjusting the actuating element 7 of the air flow control element, which pin engages in the radial cam on the front side of the control disk 9 and is guided by it. The movement of the levers 13 and 10 and, as a result, of the actuating elements 6 and 7 is therefore dependent on the trajectory of the radial cam. While the lever 13 or the actuating element 6 moves, the other lever 10 or the other actuating element 7 can therefore be at rest, and vice versa.

According to a preferred development of the actuating device 1 according to the invention, the actuating elements 6 and 7 can be driven by actuators, in particular by electric motors 17. The setting or adjustment movement of the operating element 3 on the operating unit 2 can preferably be detected via an electronic position sensor 16 and can be transmitted to the electric motors of the actuating elements via electric lines. As illustrated diagrammatically in fig. 4, in an advantageous variant of the actuating device 1 according to the invention, the motors for driving the actuating elements 6 and 7 are combined in a central motor unit 12, which can be situated, for example, on the housing of the heating or air conditioning unit 5 or at any desired location, depending on the available construction space, and from there use transmission elements 4, such as, for example, Bowden cables or flexible shafts, to move the corresponding actuating elements 6 and 7.

List of designations

1	Actuating device
2	Operating unit
3	Operating element
4	Transmission element
5	Heating or air conditioning unit
6	Actuating element - air vent
7	Actuating element - air control element
8	Air vent
9	Cam disk
10	Lever - air control element
11	Electric line
12	Central motor unit
13	Lever - air vent
14	Air Flow Control Element
15	Air Guiding Duct
16	Electronic Position Sensor
17	Electric Motor
18	Motor Vehicle
19	Vehicle Interior